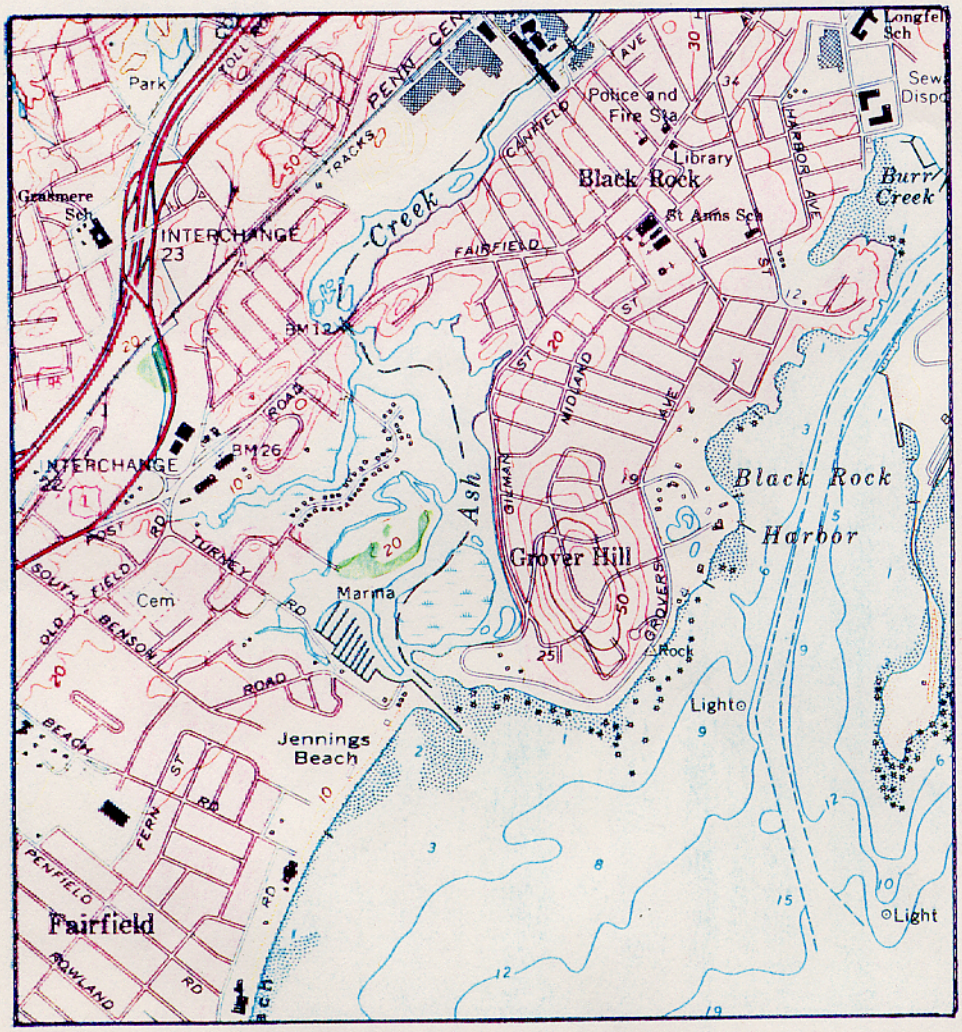
SMALL BOAT NAVIGATION PROJECT

Reconnaissance Report

ASH CREEK
Fairfield, Connecticut



Dept. of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts
August 1981

ASH CREEK
FAIRFIELD, CONNECTICUT

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RECONNAISSANCE REPORT

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

JULY 1981

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INTRODUCTION

This report is a preliminary engineering and economic feasibility study of navigation improvements in Ash Creek, Fairfield, Connecticut.

This report is a preliminary engineering and economic feasibility study of navigation improvements in Ash Creek, the boundary line between the town of Fairfield, Connecticut and the city of Bridgeport, Connecticut.

Ash Creek lies on the western side of Bridgeport Harbor, adjacent to Black Rock Harbor, on the northern shore of Long Island sound (see Fig. 1). The creek is used extensively by recreational boaters who use the boat slips within the municipally-owned marinas. Local interests have identified the need for channel improvements, dredging, and deepening, to reduce entrance delays for those deep draft boats during low tides; extensive shoaling has reduced existing channel depths. Navigation improvements will facilitate entry from the Long Island Sound and Black Rock Harbor and accommodate any future increase in the size and number of boats using Ash Creek.

In a letter dated 4 August 1980, the town of Fairfield officially requested that the Corps of Engineers study the feasibility of Federal participation in improving navigation conditions in Ash Creek under existing continuing authorities for small navigation project.

Study Authority

This reconnaissance report was prepared and is submitted under the authority and provisions of Section 107 of the 1960 River and Harbor Act, as amended.

Purpose and Scope of the Study

Local interests have requested that the Corps of Engineers study the feasibility of providing navigation improvements to mainain and promote growth of the existing fleet. The purpose of this study is to determine if there is economic justification for and a lack of obvious adverse social or environmental impacts involved with undertaking a detailed study of navigation improvements in the Ash Creek approach channel. This study was not intended to identify the optimum plan of improvement but only to determine if there is some feasible plan that may, with detailed study, prove to be in the Federal interest if constructed. The study was developed using readily available information obtained from the town of Fairfield, concerned citizens, and a reconnaissance investigation of the area. The scope of the study was limited to a preliminary economic evaluation of a limited number of alternative plans of improvement in an attempt to identify if some feasible plan of improvement exists and to identify the need, if any, for further study. The scope was also limited almost exclusively to economic considerations. Only a cursory review was made of potential social and environmental impacts in an attempt to define any obvioius or external concerns that may make further study impractical,

but if a detailed study is performed, environmental and social impacts and any other potential impacts will be fully evaluated.

The geographic scope of the study was limited to Ash Creek, located within the town of Fairfield. Proposed improvements will extend from deep water in Black Rock Harbor, at the mouth of Ash Creek, upstream to Ash Creek.

Study Participants and Coordination

Various offices and officials of the town of Fairfield were consulted in an attempt to define the problems and needs of the study area and to identify readily available data to be used in this report.

If a detailed study is performed, extensive coordination will be carried out in the detailed project report phase with all appropriate Federal, State, regional, and local interests.

Prior Studies & Improvements

Federal - Ash Creek was included in a reconnaissance study of Bridgeport Harbor completed 6 April 1980 by the Corps of Engineers. That study indicated that previous navigation improvements in Ash Creek was justified.

Others - No Federal studies have been performed by others in the study area.

The Report and Study Process

This report is the culmination of a reconnaissance effort, designed to utilize readily available data and make a preliminary evaluation of the feasibility of performing a detailed study of navigation improvements in Ash Creek. Most of the data utilized was obtained from local sources. All pertinent information accumulated in this data review is included in the body of this report. The preliminary nature of this report must be emphasized. It should be noted that any plans of improvement evaluated in this report are not necessarily those which will eventually become the proposed plan of improvement and future study efforts will not be limited to those plans combined herein. This reconnaissance report was prepared as a summary of analyses performed during the first stage of the two stage study process required for all studies performed under Section 107 authority. The study was carried out in accordance with the most current applicable Federal regulations pertaining to the planning process for water resource improvmenet studies. If a detailed study is performed, a complete assessment of project feasibility and impacts will be made during that second stage and the report prepared summarizing Stage 2 activities (Detailed Project Report) will make a recommendation either to authorize construction of navigation improvements or not. A Detailed Project Report is both the final planning and engineering document in a study performed under Section 107 authority.

PROBLEM IDENTIFICATION

In this section, background information about existing conditions is presented along with a scenario of conditions expected to occur without any Federal action. This information is analyzed to identify problems, needs, and opportunities for the study area. Planning constraints are then identified by analyzing existing physical conditions, laws, policies, and economies. Finally, specific planning objectives are formulated for the project through concurrent consideration of national objectives; local conditions, problems, needs, and opportunities; planning constraints; and local plans for development.

National Objectives

Planning for navigation improvements in the Ash Creek area was performed in accordance with the standards and principles as set forth in 1973 by the National Water Resources Council in "Principles and Standards for Planning Water and Related Land Resources." The purpose of the "Principles and Standards" is to promote the quality of life by planning for equal attainment of these national objectives as defined below:

NED Objective -

To enhance national economic development by increasing the value of the nation's output of goods and services and to improve national economic efficiency.

EQ Objectives -

To enhance the quality of the environment by the management, conservation, preservation, creation, restoration, and improvement of certain natural resources, cultural resources, and ecological systems.

It must be emphasized that ideally the two national objectives should be sought equally. In this reconnaissance report, however, detailed environmental analyses were not possible in consideration of the funding limitations and study scope. This report, therefore, emphasizes the fulfillment of the NED objective more that the EQ objective. A detailed project report will consider the EQ objective in much greater detail.

Study Area and Existing Conditions

The study area is located in the vicinity of Bridgeport Harbor on the north shore of Long Island Sound, approximately 57 miles east of New York City and 20 miles west of New Haven. Bridgeport consists of two main areas. The main harbor, which is located in the central and eastern portion of Bridgeport and the Black Rock Harobr, whiwh is located in the western portion. Ash Creek is approximately one-half mile west of Black Rock Harbor and is the boundary line between the town of Fairfield and the city of Bridgeport. This area developed as an industrial center during the civil war and has continued through to present day; growth has been largely due to immigration. With the construction of interstate highway

systems, the Fiarfield-Bridgeport area has become very accessible to the entire northeast region of the country. The Connecticut Turnpike (I-95) passes directly through the Bridgeport and the Merit Parkway (Rte. 15) has a new direct connection via Route 25.

The decade between 1940 and 1950 Bridgeport saw the largest increase in population since 1920. Between 1950 and 1970, the population of the city remained relatively stable, declining slightly by approximately 1.4%.

Conditions If No Federal Action Taken

If no Federal action is taken, the average recreational boating growth would be significantly reduced. Damages to recreational craft would continue. The creek would continue to be utilized by recreational craft, with the deeper-draft boats having resticted use of the area. This would discourage development and fleet expansion in Ash Creek.

Problems, Needs, and Opportunities

Shoal areas in the entrance channel caused tidal delays for deeper draft sailboats that berth in the municipally-owned marina. Delays are reported to be up to several hours for some boas. The town of Fairfield has requested a deep channel to eliminate the tidal delays, also to accommodate larger boats in the future.

Establishing the proper channel depth in Ash Creek would allow boats to navigate the creek at all times, eliminating tidal delays.

Planning Constraints

In an attempt to develop management measures that may solve the problems and fulfill the needs identified above, consideration must be given to certain constraints known to exist that limit the available scope of solutions and are, therefore, used to direct plan formulation and restrict impacts. Such constraints can be of many different types originiating from different sources. They may include natural or man-made physical features within the project site, technological states-of-the art, economic limitations, or legislative restrictions.

Boat slip within thh municipally-owned marina is Ash Creek are currently restricted to property owners of the town of Fairfield. This restriction would prohibit Federal participation in navigation improvements in Ash Creek, should this practice continue.

Planning Objectives

Planning objectives are basically statements that restate national, state, and local water and related land resource management problems and needs for the given study area in a positive manner. Planning objectives must be clearly stated so that they can be used as a measure for plan evaluation.

Planning objectives can be delineated by basically two methods of approach:

(1) Addressing known areas of public concern.

(2) Anticipating future "without project" conditions to identify problems and needs not so readily apparent to the public at the present time.

Based on consideration of known areas of public concern and anticipated "without project" conditions, the following planning objective was identified for the study.

Enhance recreational boating in the Ash Creek area for the period 1982 through 2032.

FORMULATION OF PRELIMINARY PLANS

Consideration of the problems, needs, and opportunities led to the formulation of alternative preliminary plans. These plans, designed to achieve the national objectives and the planning objective stated previously, were developed in consideration of the previously identified planning constraints. State and local objectives were also paramount considerations in the evaluation of alternative plans.

Management Measures

As the basis for formulating alternative plans, a broad range of management measures can be identified to address the planning objectives. Management measures can generally be categorized as either structural or non-structural, and each should be considered in equal detail.

Structural measures would generally involve dimensional variations of the main channels and anchorage areas in the Crane and Porter Rivers. Non-structural measures would principally involve the determination of achieving the planning objective by other means at lower costs, such as restricting the use of the available deep-water anchorage areas to those craft requiring a deep-water anchorage.

At this stage of study, the following management measures were identified:

(1) Dredge a main acess channel from deep water into Ash Creek
(2) Provide improved aids to navigation
(3) Transfer deep-draft vessels to other rivers and harbors

Plan Formulation

Utilizing a knowledge of the problems and needs in the study area, management measures were combined into various plans for managing the area's resources that meet the planning objective and area needs. In this preliminary phase, four alternatives were identified as viable plans. Equal consideration was given to both structural and non-structural plans:

(1) No Action Plan - If present conditions persits and no improvement is made, the Ash Creek area would probably halt growth in the recreational fleet. Boat damages would continue. The result of this alternative would be a continuation of the current navigation difficulties.

(2), (3), (4) Dredge Channel to 6', 8', 10' - These plans would involve dredging access channels from deep water in the Black Rock Harbor into Ash Creek.

If a detailed study is performed, an attempt will be made to identify all technical and feasible alternative plans.

ASSESSMENT OF A SINGLE PLAN

As stated in the introduction section of this report, the purpose of this report is not to formulate and assess the optimum plan of improvement but only to determine if there is some feasible plan that may prove to be in the Federal interest. This is done only as a decision-making tool to evaluate the need for detailed study of many alternatives. The plan evaluated herein is not necessarily the plan that will be selected after a detailed analysis is performed. This plan is only evaluated over the others based upon the availability of data at this early stage of study and recognition of local desires.

Alternative Plan Chosen for Evaluation

For the purpose of evaluation of the need for a detailed study, Alternative 2, dredge channel to 6', will be evaluated.

The plan to be evaluated consists of dredging a 60-foot wide, 6-foot deep entrance channel from Black Rock Harbor into Ash Creek.

Estimate of First Costs

The evaluated plan of improvement would involve dredging a 6-foot deep (MLW), 60-foot wide entrance channel into Ash Creek from deep water previously; the cost of construction will be proprotioned between Federal and local interests. Maintenance of the dredge areas would be a Federal responsibilitly, and the U.S. Coast Guard would provide and mainain all aids to navigation. The estimated first costs are based on a continuous hydraulic dredging operation with disposal at a nearby land site. An estimate for aids of navigation has been made for this report based on projects of similar size. Specific costs for aids to navigation will be obtained from the U.S. Coast Guard if a detailed study is perform. Table I depicts the estimated first cost of the evaluated plan of improvement.

TABLE I

FIRST COST

Dredging (Ordinary Material) 9,600 c.y. @ $7.10/c.y.	$ 68,200
Contingencies (20%)	13,600
Engineering and Design (8%)	6,500
Supervision and Administration (8%)	6,500
Subtotal	$ 94,800
U.S. Coast Guard Aids to Navigation	4,000
Total First Cost	$ 98,800
Say	$ 99,000

Annual charges are based on an estimated project life of 50 years and an annual interest rate of 7-3/8%. Maintenance dredging is based on an assumed annual shoal rate of 5 percent. The unit cost of maintenance dredging reflects the anticipated increase in cost necessitated by the use of alternative disposal areas in the future. The annual charges are shown in Table II.

Table II

ANNUAL CHARGES

Interest and Amortization ($99,000 x .07591)	$ 7,515
Annual Maintenance (480 c.y. @ $7.75 c.y.	3,720
Navigation Aids	1,000
Total Annual Charges	$12,235
Say	$12,200

Estimate of Benefits

Improvements of the Ash Creek entrance channel would result in significant benefits to existing and prospective recreational boating interests. Recreational benefits have been computed on the basis of net annual return to boatowners if their respective boats were for hire and in accordance with the established policy of the Corps of Engineers.

Evaluation of the benefits was made for the existing facilities as determined by a survey of existing facilities. Benefits were also evaluated for those boats expected to enter the project area immediately after improvements as well as for new boats attracted to the site within a 10-year growth period. Local boating interests and historical data have been researched to determine the respective short-term and long-range development plans, thus determining the magnitude of future growth.

There are a few full-time fishing craft operating out of Danvers at the present time, but the magnitude of the economic benefits that would be realized by commercial craft with improvements is small in comparison to the recreational benefits; therefore, for this analysis commercial benefits have not been computed. However, commercial benefits will be fully evaluated if a detailed study is performed.

Discussion of Benefits and Benefit Tables

Recreational benefits are outlined in Table III. An annual benefit of approximately $28,100 would occur by improving conditions for the existing fleet.

Comparison of Benefits and Costs

As stated in the discussion of national objectives, national economic development is one of the two prime national objectives. A proposed plan's contribution to the national economic development is measured by comparing the projects annual benefits and costs. If the benefits exceed the costs, the benefit-cost ratio (BCR) will be greater than one. If the BCR is greater than 1, the plan is considered to have a positive effect on the nation's economic development. The BCR for the evaluated plan is presented in Table IV.

Table IV

COMPUTATION OF THE BENEFIT-COST RATIO

	Benefits	Costs	B/C Ratio
Evaluated Plan of Improvement	28,100	12,200	2.3

Apportionment of Cost

The first cost of construction of proposed improvements is apportioned between Federal and non-Federal interests in proportion to general and local benefits 50 percent Federal and 50 percent local.

Allocation of Cost

All of the Federal costs of this evaluated plan would be attributed to dredging a main access channel.

Federal Responsibilities

One half of the first cost of project construction would be a Federal responsibility since the project is for recreational boating. All costs of navigation aids and future maintenance, assuming continued justification, availability of funds, and environmental acceptability would also be a Federal responsibility.

Local Responsibilities

Local interests would be required to:

(1) Provide, maintain, and operate without cost to the United States an adequate public landing with provisions for the sale of motor fuel, lubricants, and potable water open and available to the use of all on equal terms.

(2) Provide without cost to the United States all necessary lands, easements, and rights-of-way required for construction and subsequent maintenance of the project including suitable dredged material disposal areas with necessary retaining dikes, bulkheads, and embankments therefor.

(3) Hold and save the United States free from damages that may result from construction and maintenance of the project.

(4) Accomplish without cost to the United States alterations and relocations as required in sewer, water supply, drainage, and other utility facilities.

(5) Provide and maintain berths, floats, piers, and similar marina and mooring facilities as needed for transient and local vessels as well as necessary access roads, parking areas, and other needed public use shore facilities open and available to all on equal terms. Only minimum, basic facilities and services are required as part of the project. The actual scope or extent of facilities and services provided over and above the required minimum is a matter of local decision. The manner of financing such facilities and services is a local responsibility.

(6) Assume full responsibility for all project costs in excess of the Federal cost limitation of $2,000,000.

(7) Establish regulations prohibiting the discharge of untreated sewage, garbage, and other pollutants in the waters of the harbor users thereof, which regulations shall be in accordance with applicable laws or regulations of Federal, State, and local authorities responsible for pollution prevention and control.

(8) Provide a cash contribution toward contruction costs, determined in accordance with existing policies for regularly authorized projects, in view of recreational benefits, land enhancement benefits, or similar type special and local benefits excepted to accrue. The present basis for cost-sharing in recreational small-boat projects provides that the Federal Government will participate to not more than 50 percent of the first cost of general navigation facilities serving recreational traffic.

Impact and Mitigation Considerations

Environmental and mitigation considerations have not been evaluated at this stage of the study. During the second stage of the studies, impacts and mitigation requirements are outlined and considered in detail.

REQUIREMENTS FOR FURTHER STUDY & COORDINATION

This report, as described previously, is a preliminary report based on readily available data for the purpose of evaluating the need for detailed study of navigation improvements in Ash Creek. In a detailed project report, many items outlined in this report will require further detailed study.

Existing Conditions

The existing conditions of the study area will have to be determined in much greater detail. Physical conditions will have to be examined through field visits, hydrographic studies, borings, and other engineering analyses. The existing economic conditions will have to be detailed through field visits and interviews with local commercial interests. Environmental conditions at the site will be evaluated through field surveys; review of existing data; and physical, chemical, and biological sampling and testing.

Problems, Needs, and Opportunities

The problems, needs, and opportunities will be delineated in greater detail through interviews with Federal, State, regional, and local interests and more detailed analysis of existing conditions.

Constraints, Controls, and Objectives

Better delineation of planning constraints, controls, and objectives will be attained through detailed examination of physical conditions, laws and regulations, institutional analysis, area problems and needs, and overall national policy and objectives.

Economic Studies

Much more detailed economic studies will be performed on many formulated plans in an attempt to identify that plan, if any exists, which maximizes the benefit to the national economic development objective. Economic data will be developed through field visits, institutional studies, reference to commercial statistics and all other studies, reports, and data available for review.

Engineering Studies

Detailed engineering studies will be performed for all the proposed alternative plans to allow for the optimum engineering design, accurate quantity estimates, and sound engineering performance.

Environmental Studies

Complete analysis of environmental impacts associated with each alternative plan developed will be carried out to evaluate the impacts and identify mitigation requirements and possibilities. Studies will include a complete analysis of disposal alternatives associated with project dredging, impacts on water quality, etc. An environmental impact statement or environmental assessment will be written as part of any detailed study effort.

Public Involvement and Coordination

At all stages of any detailed study effort, attempts will be made to identify all interested parties and keep them informed of study developments through public notices, public meetings, workshops, informal discussions, media contact, and any other possible means of effective communication. Public comments and input to the study will be accepted and considered at all stages of the study project.

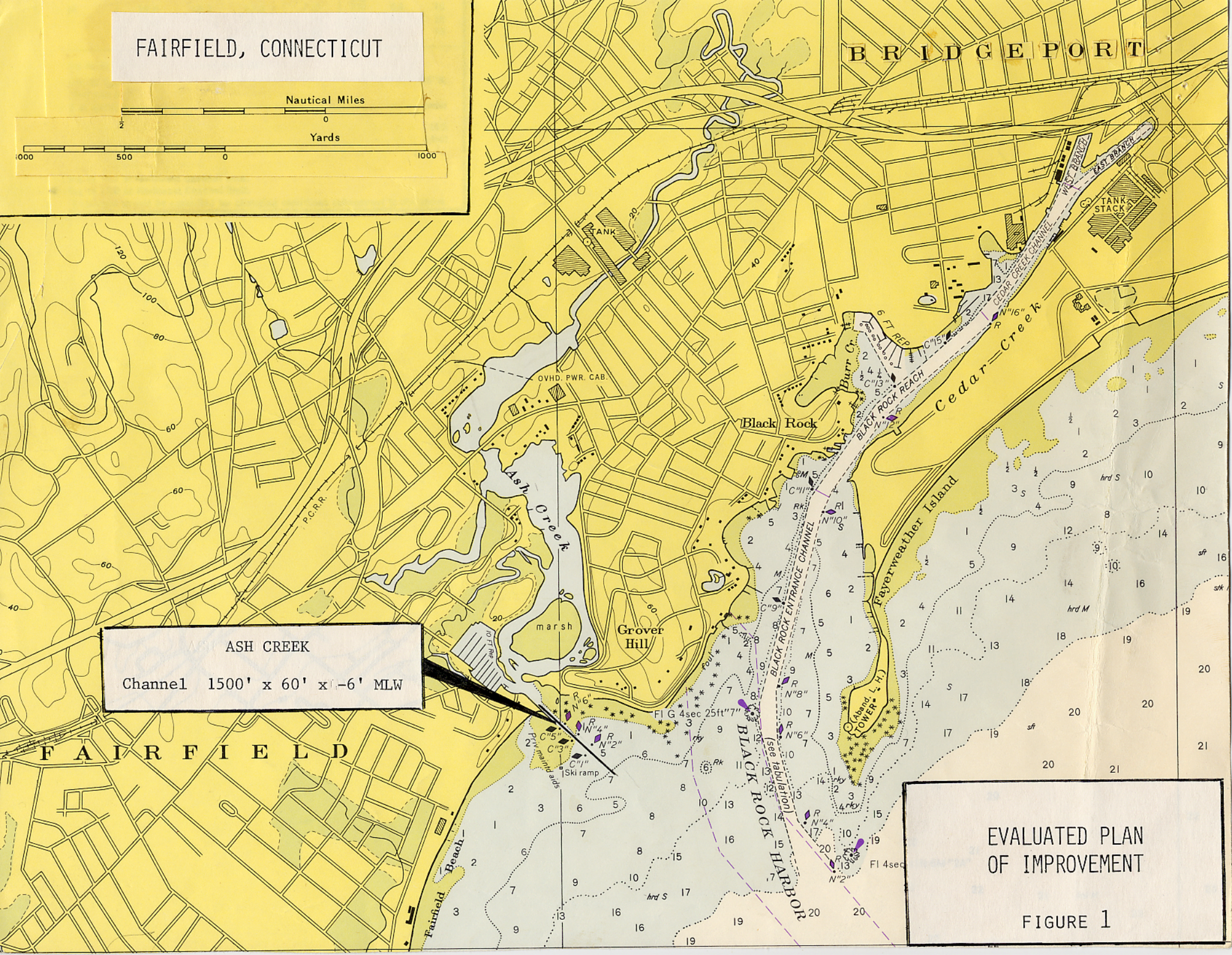
CONCLUSIONS

Conclusions

According to preliminary analyses, there is at least one economically feasible plan for navigation improvements in the study area. Local interests strongly support such improvements. Detailed analyses will be required before any final recommendations can be made.

Recommendation

The Division Engineer recommends a detailed study of navigation improvements to Ash Creek, Fairfield, Connecticut.


FAIRFIELD, CONNECTICUT
Nautical Miles
½
0
Yards
1000
500
0
1000
BRIDGEPORT
TANK
TANK STACK
WEST BRANCH
EAST BRANCH
CEDAR CREEK CHANNEL
6 FT REP
OVHD. PWR. CAB.
Burr Cr
BLACK ROCK REACH
Cedar Creek
Black Rock
Ash Creek
P.C.R.R.
marsh
Grover Hill
Fayerweather Island
BLACK ROCK ENTRANCE CHANNEL
Aband. L. H.
(see tabulation)
BLACK ROCK HARBOR
Fl G 4sec 25ft"7"
Fl 4sec
Ski ramp
Fairfield Beach
FAIRFIELD
ASH CREEK
Channel 1500' x 60' x -6' MLW
EVALUATED PLAN
OF IMPROVEMENT
FIGURE 1